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Chronic CAD/Stable Ischemic Heart Disease

ASSOCIATION BETWEEN PLATELET AGGREGATION AND MENTAL STRESS INDUCED MYOCARDIAL ISCHEMIA: RESULTS FROM THE REMIT TRIAL

Poster Contributions
Poster Sessions, Expo North
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Session Title: Mental Stress on the Heart
Abstract Category: 10. Chronic CAD/Stable Ischemic Heart Disease: Clinical
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Background: Mental stress can induce ischemia in patients with coronary artery disease. The purpose of this study was to determine if susceptibility to mental stress induced myocardial ischemia (MSIMI) is associated with differential platelet reactivity.

Methods: Coronary heart disease patients enrolled in the NIH-funded REMIT study underwent assessment of platelet aggregation in response to epinephrine, collagen, ADP, each agonist with serotonin, and serotonin alone at rest and immediately following mental stress testing. MSIMI was defined by a decrease in left ventricular (LV) ejection fraction ≥8% in response to all three mental tasks or a new wall motion abnormality during any mental task. Generalized linear models were used to test for an association between MSIMI and changes in platelet aggregation following mental stress.

Results: Baseline characteristics were similar between the 100 subjects with MSIMI and the 49 subjects who had normal LV response (NLVR) to mental stress, except there were more women in the MSIMI cohort (18% vs. 4%, $p<0.05$). Overall, 97% were on aspirin and 45% were on additional antiplatelet therapy. Pre-stress platelet aggregation was similar between the MSIMI and NLVR cohorts. Mental stress, however, induced greater platelet aggregation in patients with MSIMI compared to patients with NLVR (Table).

Conclusion: Significantly higher mental stress induced platelet aggregation in patients with MSIMI could be responsible, in part, for their tendency to experience MSIMI.

Table: Change, from baseline, in percent platelet aggregation following mental stress

Agonist	NLVR (N = 49)	MSIMI (N=100)	p-value
Epinephrine 10μM	-0.33 (1.23)	2.55 (0.86)	0.06
Collagen 10μM	-3.35 (2.03)	1.93 (1.42)	0.04
ADP 5μM	-0.90 (1.55)	2.48 (1.07)	0.08
5HT 10μM	-0.60 (1.06)	1.38 (0.74)	0.13
5HT 10μM + epinephrine 2μM	-2.26 (1.83)	0.70 (1.27)	0.19
5HT 10μM + collagen 2μM	-9.49 (2.09)	-6.67 (1.45)	0.27
5HT 10μM + ADP 1μM	-5.43 (1.60)	1.98 (1.11)	0.0002

Data are presented as least squares mean and standard error of the mean after adjustment for gender and baseline platelet aggregation. Abbreviations: 5HT, serotonin; ADP, adenosine diphosphate; NLVR, normal left ventricular response; MSIMI, mental stress induced myocardial ischemia.